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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,203	07/03/2003	Gurtej S. Sandhu	303.931US2	4599

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EXAMINER	
MALDONADO, JULIO J	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,203	SANDHU ET AL.	
	Examiner	Art Unit	
	Julio J. Maldonado	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,52,53 and 60-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) A is/are rejected. ← 1-13, 52, 53 and 60-62

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 8-13 and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Summerfelt et al. (U.S. 6,362,068 B1).

Summerfelt et al. (Figs.1-5) teach a capacitor structure including a bottom electrode layer (30); a first high-dielectric layer (32) contacting said bottom electrode layer (30), wherein said first dielectric layer is selected from the group including strontium titanate or metal-doped strontium titanate (Table 2); a second high dielectric layer (34) selected from the group including barium strontium titanate or metal-doped barium strontium titanate (Table 2); a third high-dielectric layer (32) selected from the group including strontium titanate or metal-doped strontium titanate (Table 2); and a top electrode (46), wherein said first dielectric layer has a first thickness, said second dielectric layer has a second thickness and said first thickness is different than said second thickness, said first, second and third dielectric layers form a plurality of dielectric layers (column 3, line 17 – column 6, line 10).

Summerfelt et al. fail to expressly teach wherein at least two layers of said dielectric layer of said plurality exhibit different degrees of oxidation, wherein said second dielectric layer has a lower oxygen concentration than said first dielectric layer or wherein said layers exhibit different amounts of oxygen per unit volume. Summerfelt et al. teach these limitations because Summerfelt discloses metal-rich dielectric layers.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5-7, 52, 53, 61 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfelt et al. (U.S. 6,362,068 B1) as applied to claims 1-4 and 8-13 above, and further in view of the following comments.

Summerfelt et al. (Figs.1-5) teach a capacitor structure including a bottom electrode layer (30); a first high-dielectric layer (32) contacting said bottom electrode layer (30), wherein said first dielectric layer is selected from the group including strontium titanate or metal-doped strontium titanate (Table 2); a second high dielectric layer (34) selected from the group including barium strontium titanate or metal-doped barium strontium titanate (Table 2); a third high-dielectric layer (32) selected from the group including strontium titanate or metal-doped strontium titanate (Table 2); and a top electrode (46), wherein said first dielectric layer has a first thickness, said second dielectric layer has a second thickness and said first thickness is different than said

second thickness, said first, second and third dielectric layers form a plurality of dielectric layers (column 3, line 17 – column 6, line 10).

Summerfelt et al. fail to expressly teach wherein at least two layers of said dielectric layer of said plurality exhibit different degrees of oxidation, wherein said second dielectric layer has a lower oxygen concentration than said first dielectric layer or wherein said layers exhibit different amounts of oxygen per unit volume. Summerfelt et al. teach these limitations because Summerfelt discloses metal-rich dielectric layers.

Summerfelt et al. substantially teach all aspects of the invention but fail to disclose wherein said plurality of dielectric layers defines a thickness at most 200 angstroms; wherein said first dielectric layer has a thickness of at least 10 angstroms; wherein the layers define a total thickness ranging from 50 to 70 angstroms; and wherein at least a lowest layer of said plurality defines an individual thickness of about 20 angstroms. Notwithstanding, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); Gardner v. TEC

Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Response to Arguments

5. Applicant's arguments filed 05/02/2006 have been fully considered but they are not persuasive.

In response to Applicants' arguments, and in order to clarify the rejection the rejection is not based on inherency. The rejection is based on a logical argument that does not require evidence, and further, is based on the broadest reasonable interpretation of the term in the art of the term "lower degree of oxidation". The recitation of lower degree of oxidation is seen to be a recitation of a greater concentration of free metal with respect to another layer with a lower concentration of free metal. Summerfelt et al. teach barium strontium titanate or metal-doped barium strontium titanate wherein the metal-doped barium strontium titanate has a lower degree of oxidation for the reason discussed above.

Conclusion

6. Applicants are encouraged, where appropriate, to check Patent Application Information Retrieval (PAIR) (http://portal.uspto.gov/external/portal/pair) which provides applicants direct secure access to their own patent application status information, as well as to general patent information publicly available.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571) 272-1907. The fax number for this group is 571-273-8300. Updates can be found at http://www.uspto.gov/web/info/2800.htm.

Julio J. Maldonado
Patent Examiner
Art Unit 2823

Julio J. Maldonado
February 1, 2006

George Fourson
Primary Examiner